Audiometric Exam Module Installation Guide

Patch ACKQ*3.0*12

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V*ist***A** Health Systems Design & Development

Preface

Purpose

The Audiometric Exam Module of QUASAR (Quality: Audiology and Speech Pathology Audit and Review package) was developed for Audiology and Speech Pathology Service (ASPS) to simplify and enhance the entry, display and use of information obtained during the audiometric exam of a patient.

Scope of Document

This manual covers the information necessary for the site's Information Resource Management (IRM) to install the Audiometric Module.

Audience

The information in this manual is intended to aid Information Resource Management (IRM) in the installation of this software.

Related Manuals

Audiometric Exam Module Version 3.0*12 Technical Manual

Audiometric Exam Module Version 3.0*3 Security Guide

Audiometric Exam Module Version 3.0*12 User Manual

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Table of Contents

Preface i
Purpose i
Scope of Document i
Audience i
Related Manuals i
Table of Contents iii
Introduction 1
Purpose of the Audiometric Exam Module 1
Notations and Directions 1
Orientation 2
Symbols used in manual 2
Getting additional information 2
Application Architecture Overview 2
Chapter 1: Pre-Installation Issues 3
Recommended Desktop Minimums 3
System Configuration Issues 4
Chapter 2: Installation Instructions 5
Installation Overview 5
Step 1: KIDS (Kernel Installation and Distribution System) Installation Instructions 7
Step 2: Place the executables on the network (overwriting the originals). 7
Step 3: Assigning ACKQROES3* Options to Users 8
Step 4: Assign ACKQROES3 VistA menu option to other selected staff VistA menus. 9
Step 5: Audiogram Setup - Adding to CPRS Tools 10
Step 6: Audiogram Desktop Application Setup 11
Chapter 3: Audiogram System 13
Options in the Audiogram Module 13
Remote Procedures 13
M Routine list 14
Delphi Executables 14
Chapter 4: Files 15
Local Files 15
Archiving/Purging 16
Glossary 17
Index 19

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Introduction

Purpose of the Audiometric Exam Module

The Audiometric Exam Module is comprised of two distinct application functions: the Audiogram Edit function and the Audiogram Display function.

The Audiogram Edit function (ACKQROES3E.exe) is a Windows based software application that allows providers to enter, edit and view a patient's audiogram exam record from the Computerized Patient Record System (CPRS) Tools menu or from the end user's desktop. Using this function, a new audiogram record can be entered, or an existing one can be edited. In patch 12, the user may enter a new audiogram or select any existing audiogram for the patient to edit. They may also loop through existing audiograms (without re-entering codes) with the menu option *Get New Record*.

Completed and signed records are stored in a local QUASAR global. They are also transmitted from this application to the Denver Distribution Center (DDC) through the **V***ist***A** MailMan system for inclusion with orders for hearing aids and repairs when ordered through the **V***ist***A** Remote Order Entry System (ROES) package. In patch 12 a menu option to delete signed audiograms has been added, for the situation when an audiogram was signed in error. When a signed audiogram is deleted, a message is sent to the DDC and it is deleted from the central database there also.

The Audiogram Display function (ACKQROES3.exe) is also Windows based and allows clinicians to view a patient's audiogram from the CPRS Tools menu or from the desktop. It can also be called from the Audiogram Edit application (ACKQROES3E.exe), if the applications exist in the same directory folder. Patch 12 also added the capability to loop through additional records from the Get Next Record menu option. The Display function presents the clinical information in a standard format recognized within the hearing industry. The user can also copy or print the display(s). In patch 12 an updated version of form VA 10-2364 is also included.

Notations and Directions

If the user is not set up to use multiple Broker environments, the program may default to use BROKERSERVER on port 9200. If single signon is enabled in the selected environment and an end user has auto login and multiple signon and an active session in another **V***ist***A** application, local Access and Verify codes may not be needed. Otherwise, he/she should use their local Access and Verify codes for the **V***ist***A** account, if prompted.

Orientation

Symbols used in manual

In code examples, the caret (^) or 'U' are used interchangeably as separators.

The caret is also used to designate a global reference when used in front of a global name as in ^DPT(.

Getting additional information

Visit the **V*ist*A** document library http://www.va.gov/vdl/ for the ROES Adobe Acrobat PDF and Microsoft WORD documentation.

Use the **V*ist*A** KIDS Build File Print option [XPD PRINT BUILD] if you would like a complete listing of package components exported with this software.

Use the **V*ist*A** KIDS Install File Print option [XPD PRINT INSTALL FILE] if you'd like to print out the results of the installation process.

Application Architecture Overview

The Audiometric Exam Module includes components that reside on two systems: the local facility **V*ist*A** system and the DDC system. The local facility components include a **V*ist*A** file, 'M' routines and options, remote procedure calls and two Delphi executables. The general purpose of these components is to gather and store information, display it in graphical format (audiogram), generate a VA form 10-2364 that can be copied to the Windows Clipboard or printed directly, and to electronically transfer that exam data to the DDC for inclusion in ROES hearing aid and repair orders.

Chapter 1: Pre-Installation Issues

Recommended Desktop Minimums

SPECIFICATION	RECOMMENDED MINIMUM
Processor	200 MHz
Memory	64 MB
Hard Drive	4GB
Video	AGP 2x w/4MB
CD-ROM	8x
Monitor	17" VGA, .28 pixel resolution
LAN Interface	10/100 Mbps Ethernet
Keyboard	101 -key
Mouse	Microsoft Compatible
Operating System	Microsoft Windows 9x, 2000 or XP (MS Windows XP or Windows 2000 Pro strongly recommended)
Browser	IE 5

A system meeting the above specifications can be expected to provide the functionality necessary for this application. The VA Assistant Secretary for Information and Technology has established a set of minimum configurations for any new procurement of desktop systems across the enterprise (VA Directive 6401) For most of the specifications listed above, the VA minimum baseline exceeds the recommended minimum for this application, but the above specifications are provided to allow for use of existing equipment, if necessary. In assessing procurement and/or other resource acquisition actions to meet this application's requirements, each facility is advised to give consideration to the specifications mandated by the above-mentioned Directive. Conformance with these established and/or emerging VA standards is encouraged. A dynamic update of the VA desktop standards is maintained at http://vaww.vairm.vaco.va.gov/vadesktop/

System Configuration Issues

The site's **V***ist***A** Server must be running the **V***ist***A** Broker listener. The **V***ist***A** Broker client must be installed and functional on the desktop system. The **V***ist***A** system must have VA MailMan connectivity to the DDC (i.e., DDC.VA.GOV domain open) in order to transmit the audiometric data to the DDC.

The end user's desktop system must be running a Windows operating system (WinNT, Win2K, WinXP).

Two Delphi executable files are included in this distribution package. Both files (ACKQROES3.EXE and ACKQROES3E.EXE) are designed for integration with CPRS and depend on a patient being identified prior to the option being invoked. Upon completion of the installation procedures, these should appear as a selectable option on the CPRS Tools menu. Both options may however, be made available to end users via a desktop shortcut to the application path (minus the DFN reference), although other typical Windows methods of invoking the option can be considered, such as adding the option to the Windows Programs menu. The instructions throughout this document assume that the application files have been installed in a specific location and that a desktop shortcut to the application is available to the end user.

Desired placement of these ACKQROES* Delphi files should be determined in advance and may vary based on facility-specific practices regarding broker-based applications. A common and recommended practice is to place the files on a central shared network resource. The appropriate CPRS and desktop setup procedures can then reference that central location using a standard UNC path (*servername**sharename**filename*). An alternative practice may be to place the executables on each client computer, referencing that application path in the CPRS and desktop setup.

It is recommended that proper coordination be done with ASPS for determination of menu option assignment.

DDC ROES 3.0 order processing also incorporates patient-specific audiometric information from this QUASAR package. ROES release (ROES*3.0) provides end users with order entry and display capabilities that include this audiometric information. It is recommended that ROES*3.0 be installed along with ACKQ*3.0*12, if it is not already in place.

Chapter 2: Installation Instructions

Installation Overview

The Audiometric Exam module includes a KIDS build and one zipped file. The zip file contains two Delphi executable files (ACKQROES3.exe and ACKQROES3E.exe). The updated KIDS installation has several modifications to the FileMan file and associated **V*ist*A** menu options, remote procedure calls and routines. The two Delphi executable files provide the interface for entering the exam data and viewing the resulting audiogram. These can be accessed from either the CPRS Tools menu or from the user's desktop. Broker option ACKQROES3 is used to establish context for the ACKQROES3.EXE application. Option ACKQROES3E is used to establish context for the enter edit application ACKQROES3E.EXE. Both of these **V*ist*A** options must be assigned to users of the Audiogram Edit program (ACKQROES3E.EXE).
The Vista option ACKQROES3 must also be assigned to users who only have access the Audiogram Display program.

The Audiogram Exam module requires that the RPC Broker V1.1 listener be installed on any workstation from which either GUI will be executed. If a workstation can already connect successfully via CPRS or PCMM, then the RPC Broker has already been installed. If you need to install the RPC Broker, please refer to the RPC Broker website (http://vista.med.va.gov/broker/download.asp) for configuration information or to download the installation file.

The serverlist.exe application included with the RPC Broker installation file determines which broker environments a particular workstation can access. The Broker connections will default to BROKERSERVER on port 9200, if other choices are not provided. If you need more information on Serverlist.exe, please refer to the RPC BROKER TECHNICAL MANUAL available from the above web site.

As described in *Chapter 1*, desired placement of the two QUASAR Delphi files (ACKQROES3.EXE and ACKQROES3E.EXE) should be determined in advance and may vary based on facility-specific practices regarding broker-based applications. A common and recommended practice is to place the files on a central shared network resource. The appropriate CPRS and desktop setup procedures can then reference that central location using a standard UNC path (*servername**sharename**filename*). An alternative practice may be to place the files on each client computer, referencing that application path in the CPRS and desktop setup.
Storing a copy of the original executables for reference is recommended.

The following sequence summarizes the remaining steps to set up the applications. These should be completed incrementally and during the same session in order for all of the new features to function correctly. Detailed descriptions of these procedural steps follow.

1. Install the KIDS distribution
2. Place the executables in the desired location on the network (overwriting the originals).
3. Assign ACKQROES3 and ACKQROES3E **V***ist***A** menu options to selected ASPS staff
4. Assign ACKQROES3 **V***ist***A** menu option to other selected staff **V***ist***A** menus.
5. Add ACKQROES3.EXE and ACKQROES3E.EXE applications to CPRS Tools menu
6. Add ACKQROES3.EXE and ACKQROES3E.EXE applications to user desktop environments where needed.

The audiogram applications (ACKQROES3.EXE and ACKQROES3E.EXE) must be in the same directory folder in order for the enter/edit program to directly call the display program

Step 1: KIDS (Kernel Installation and Distribution System) Installation Instructions

1. Users ARE allowed to be on the system during the installation. It will take about 15 minutes to complete the installation, but may take considerably more time if multiple desktop systems must be updated.

2. You DO NOT need to stop Taskman or the background filters.

3. Use the 'INSTALL/CHECK MESSAGE' option on the PackMan menu. This option will load the KIDS package onto your system.

4. After *Verify Checksums* and *Backup a Transport Global*, use the *Install* option.

5. The **V***ist***A** menu options ACKQROES3 and ACKQROES3E should be disabled during the install.

6. A post install routine, ACKQAG08, will be run to convert current entries to the new format for the file data (removes dependence upon the tag fields and makes value threshold fields free text).

Step 2: Place the executables on the network (overwriting the originals).

Locate existing copies of the executables: ACKQROES3.EXE and ACKQROES3E.EXE and manually copy these files over the originals of the same name. Existing shortcuts from the desktop or CPPRS Tools to these locations should then continue to work with the new programs. Only if they are located in the same directory and folder will the users be able to call the Audiogram Display application directly from the Audiogram Edit application.

Step 3: Assigning ACKQROES3* Options to Users

If not previously completed in the original installation, all Audiologists and other designated staff doing audiogram editing should have **V*ist*A** options ACKQROES3 and ACKQROES3E added to their **V*ist*A** menu options. Additional staff should be identified by the ASPS Service Chief prior to installation.

Use VA FileMan to edit the SECONDARY MENU OPTIONS of all designated users.

```
      Select OPTION: 1  ENTER OR EDIT FILE ENTRIES

INPUT TO WHAT FILE: NEW PERSON// 200  NEW PERSON

EDIT WHICH FIELD: ALL// SECONDARY MENU OPTIONS    (multiple)

EDIT WHICH SECONDARY MENU OPTIONS SUB-FIELD: ALL// .01  SECONDARY
MENU OPTIONS
 THEN EDIT SECONDARY MENU OPTIONS SUB-FIELD: <RETURN>
THEN EDIT FIELD:

Select NEW PERSON NAME:  USER, ASPS  (designated ASPS user name)
Select SECONDARY MENU OPTIONS: RMPFDE2// ACKQROES3
    1   ACKQROES3       Audiogram Display
    2   ACKQROES3E      Audiogram Data Edit
CHOOSE 1-2: 1  ACKQROES3     Audiogram Display
  SECONDARY MENU OPTIONS: ACKQROES3//  <RETURN>
Select SECONDARY MENU OPTIONS: ACKQROES3E      Audiogram Data Edit
       ...OK? Yes//    <RETURN> (Yes)

  SECONDARY MENU OPTIONS: ACKQROES3E//  <RETURN>
Select SECONDARY MENU OPTIONS: <RETURN>
Select NEW PERSON NAME: <RETURN>
```

Step 4: Assign ACKQROES3 VistA menu option to other selected staff VistA menus.

This will allow other non-Audiology Doctors with access to the local system to view the Audiometric Display to aid them in treatment and diagnosis decisions. This is completed by assigning just the **V*ist*A** option ACKQROES3 to a common **V*ist*A** menu, as in Step 3, and placing the application on CPRS Tools (as in Step 5) in a place accessible by these users. Users will only be able to successfully run applications if they have the associated **V*ist*A** menu option assigned to them.

Step 5: Audiogram Setup - Adding to CPRS Tools

1. If not previously completed, copy ACKQROES3.exe and ACKQROES3E.exe to a folder either on a shared network resource or on each user's workstation. Installation to a shared resource is recommended, in which case a server-based folder and corresponding share name would need to be created. Ensure proper folder- or share-level permissions are applied to allow access for Audiometric Module users. A share name of **V*ist*A** is recommended. If the file is placed in a shared location, the UNC path to that location can be used in the setup below. If placed on each workstation, the local path to that location must be used.

2. From the [OR PARAM COORDINATOR] menu select the option: **GUI Parameters**

3. From this option select: GUI TOOL MENU ITEMS

   CPRS GUI Tools Menu may be set for the following:

1	User	USR	[choose from NEW PERSON]
2	Location	LOC	[choose from HOSPITAL LOCATION]
2.5	Service	SRV	[choose from SERVICE/SECTION]
3	Division	DIV	[choose from INSTITUTION]
4	System	SYS	(will vary by site)
9	Package	PKG	[REMOTE ORDER ENTRY SYSTEM]

Determine which scope selection is appropriate based on the facility's established practice(s) regarding management of the Tools menu. Ensure that the ACKQROES3 and ACKQROES3E options are added at the proper level of granularity to make the option available to all identified Audiometric Module users.

Enter selection: **# of your choice**
Make your choice from the selected file:
Select Sequence: **1 if none exist or 1 greater than the highest number**
Name=Command:
AudiogramDisplay="*servername**sharename***ACKQROES3.EXE" DFN=%DFN DUZ=%DUZ**
Optionally, you may append (after adding a space) **s=***server name* **and p=***port number*.

4. Repeat #3 for **ACKQROES3E.EXE** and using "**AudiogramEdit**" for the name.

5. Re-enter the CPRS menu to verify that the applications appear on the tools list.

6. See the CPRS Technical Manual if further instructions are desired.

This process is similar to the installation instructions for all other RPC Broker-enabled applications, such as CPRS, BCMA, CAPRI and PCMM.

Step 6: Audiogram Desktop Application Setup (optional: dependent upon policy and end user preference)

1. Copy the latest ACKQROES3.exe and ACKQROES3E.exe files to a local or network folder in a directory accessible to the workstation. This will be referred to as *servername\sharename* in this setup. Copy the new applications over the existing applications of the same name, if previously installed.

2. If not previously setup, create a shortcut on the desktop to the application for each program by right clicking on a blank region of the desktop and selecting **NEW** | **SHORTCUT** .

a. When asked for location, type *the location where the executables have been placed.*

"*servername**sharename***ACKQROES3.exe**" *or*

"*servername**sharename***ACKQROES3E.exe**"

(The quotes around the directory string must be included.)
Optionally, you may append (after adding a space) **s=***server* and **p=***port number to restrict access to one particular environment*

b. Press **NEXT**.

c. When asked for name, type: **Audiogram Display** (for ACKQROES3) *or*
Audiogram Edit (for ACKQROES3E)
[This name may be changed for clarity if preferred by individual users]

d. Press **FINISH.**

e. Repeat for other program

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Chapter 3: Audiogram System

The KIDS build installs the following options, remote procedure calls and routines to the **V***ist***A** system.

Options in the Audiogram Module

ACKQROES3	The option that allows access to the Audiogram Display.
ACKQROES3E	The option that allows access to the Audiogram Edit

Remote Procedures

ACKQAUD1	This RPC gets the audiogram data the selected entry in the Audiometric Exam Data file (#509850.9) and returns it to the calling program. It is used in the Audiogram Display.
ACKQAUD2	Returns a subscripted array of data values for a particular audiogram. It is used in the Audiogram Edit.
ACKQROES	This is the RPC used to setup and send the signed audiometric data file entry to the DDC. Transmission is triggered by the saving of a signed entry in the Audiogram Edit program.
ACKQROESD	Added in patch 12, this is the RPC used to send the deletion message to the DDC if the audiogram had previously been signed and sent to the DDC, and then is locally deleted.

M Routine list

ACKQAG01	Called by RPC ACKQAUD1 and routines ACKQAG02 and ACKQAG04
ACKQAG02	Called by RPC ACKQAUD2.
ACKQAG03	Called by RPC ACKQROES and routines ACKQAG03 and ACKQAG05
ACKQAG04	Called by routine ACKQAG03.
ACKQAG05	Called by routine ACKQAG03.
ACKQAG06	Called by routine ACKQAG01.
ACKQAG08	Post install routine to update the existing entries to the new file structure.

Delphi Executables

ACKQROES3.exe	Application for the Audiogram Display from both CPRS and the Desktop.
ACKQROES3E.exe	Application for the Audiogram Edit from both CPRS and the Desktop.

Chapter 4: Files

Local Files

There is one new file created by the installation of the Audiogram Module:
AUDIOGRAM EXAM DATA file (#509850.9)

The data dictionary can be viewed or printed using VA FileMan:

VA FileMan
Data Dictionary Utilities
List File Attributes
START WITH WHAT FILE: **509850.9** AUDIOMETRIC EXAM DATA
GO TO WHAT FILE: AUDIOMETRIC EXAM DATA//
Select LISTING FORMAT:
Choose from:
1 STANDARD
2 BRIEF
3 CUSTOM-TAILORED
4 MODIFIED STANDARD
5 TEMPLATES ONLY
6 GLOBAL MAP
7 CONDENSED
8 INDEXES ONLY
9 KEYS ONLY

It is highly recommended that you use **7** because of the large number of fields in this file.

Other files referenced by the module include:
PATIENT (#2)
INSTITUTION (#4)
HOSPITAL LOCATION file (#44)
NEW PERSON file (#200)
MESSAGE (#3.9)

(See the Technical Manual for an abbreviated listing)

In planning for disk space allocation and global placement, the following should be considered:

The data for a single audiogram record will typically require slightly more than 1,000 bytes (1K) of storage space. The quantity of new records created on a daily or weekly basis is dependent upon the size of the facility's Audiology clinic (number of clinicians or support staff entering audiometric test results) and the number of patients seen. Since audiometric examinations can be extensive and time-consuming, an individual clinician would not be likely to enter more than 3-4 new records in one day. The ACK global namespace should be placed via global mapping to allow for sufficient space for this global in a selected volume group.

Archiving/Purging

There are no package-specific archiving or purging procedures or recommendations for the Audiogram module.

Glossary

ALERTS	Brief online notices that are issued to users as they complete a cycle through the menu system. Alerts are designed to provide notification of pending computing activities, such as the need to process a request for eligibility
API	Application Programmer Interface.
APPLICATION PACKAGE	Software and documentation that support the automation of a service. In this case, the Remote Order Entry System.
ASPS	Audiology and Speech Pathology Service
CAPRI	Compensation & Pension Records Interchange
CPRS	Computerized Patient Record System
DDC	Denver Distribution Center. A part of the Department of Veteran's Affairs, Office of Acquisition and Materiel Management, and located in Denver, Colorado.
DFN	The internal number of the patient in the PATIENT file (#2).
GUI	Graphical User Interface. Existing in a Windows environment that allows users to interact using a mouse or keyboard.
IRM	Information Resource Management
KERNEL	A set of V*ist*A software routines that function as an intermediary between the host operating system and the V*ist*A application package (in this case ROES).

LISTENER	In ROES this is the RPC Broker on the workstation and the server.
NAME SPACING	A convention for naming V*ist*A package elements, assigned by the Database Administrator (DBA). For ROES the namespacing is RMPF
OPTION	An entry in the V*ist*A OPTION file (#19).
PCMM	Patient Care Management Module
PSAS	Prosthetics and Sensory Aids Service
QUASAR	Quality:Audiology and Speech Pathology Audit and Review
ROES	Remote Order Entry System. A package for ordering various supplies from the DDC.
ROUTINE	Groups of program lines that are saved, loaded, and called as a single unit via a specific name.
RPC	Remote Procedure Call. M code that takes optional parameters to do some work and then returns either a single value or an array back to the client application.
SECURITY KEY	A non-visual object or code that provides a layer of protection on the range of computing capabilities available with a particular software package.
SUBSCRIPT	A numeric or string value that identifies a specific node within an array or global.
UNC	Universal Naming Convention
V*ist*A	Veterans Health Information Systems and Technology Architecture.

Index

(^), 2
access and verify codes, 1
ACKQAUD1, 13
ACKQAUD2, 13
ACKQROES, 13
ACKQROES3, 11
ACKQROES3E, 11
ACKQROESD, 13
ALERTS, 17
API, 17
APPLICATION, 17
archiving, 16
ASPS, 17
Audience, i
Audiogram Display, 1
Audiogram Edit, 1
AUDIOGRAM EXAM DATA, 15
BROKERSERVER, 1, 5
client computer, 5
CPRS GUI Tools Menu, 10
CPRS Tools, 10
data dictionary, 15
DDC, 17
Delphi, 5
Denver Distribution Center, 1
desktop, 14
Desktop Application Setup, 11
DFN, 17
Division, 10
Executable list, 14
Files, 15
GUI, 17
Installation, 5
INTRODUCTION, 1
IRM, 17
KERNEL, 17
KIDS build, 13
KIDS Build File Print, 2
KIDS Install File Print, 2
LISTENER, 18
Location, 10
Minimums, 3
Monitor, 3
multiple accounts, 1
Name=Command, 10
Operating System, 3
OPTION, 18
Package, 10
package components, 2
port, 5
PSAS, 18
purging, 16
Purpose, i
QUASAR global, 1
RMPF ROES3, 5, 13
RMPFDE2, 13
RMPFRPC0, 14
ROES, 1, 18
ROES3.exe, 13, 14
ROES3DeskTop, 5, 6
Roes3DeskTop.exe, 13, 14
Routine list, 14
Routines, 13
RPC, 13, 18
RPC Broker, 5
Scope, i
SECURITY KEY, 18
server, 10, 11
Service, 10
SHORTCUT, 11
single signon enabled, 1
specifications, 3
SUBSCRIPT, 18
System, 10

'U', 2
UNC path, 10
User, 10
VA FileMan, 15
VA MailMan connectivity, 4
VA minimum baseline, 3
V*ist*A, 10, 18
V*ist*A Broker client, 4
V*ist*A Broker listener., 4
V*ist*A document library, 2
V*ist*A Server, 4